

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application.

These amendments introduce no new matter and support for the changes is replete throughout the specification, claims, and drawings as originally filed. Any changes are made without prejudice and are not to be construed as abandonment of the previously claimed subject matter or agreement with any objection or rejection of record.

### **Listing of Claims:**

1. (Withdrawn) A method for inhibiting fertilization, the method comprising administering an effective amount of a compound to an animal, the compound comprising at least one sulfonated compound, wherein the compound interacts with sperm and wherein the at least one sulfonated compound is selected from the group consisting of: a lignosulfonic acid (LSA), a polyanetholesulfonic acid (PASA), a polyvinylsulfonic acid, a poly(2-acrylamido-2-methyl-1-propanesulfonic acid), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid co-acrylonitrile), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid-co-styrene), a poly(4-vinylpyridinium p-toluenesulfonate), a sulfonic acid azo dye, a sulfonic acid derivative of a porphyrin, a sulfonic acid derivative of a triphenylmethane, a sulfonic acid derivative of a stilbene, a sulfonated phenylpropane, a sulfonated kraft lignin, and derivatives thereof.
2. (Withdrawn) The method of claim 1, wherein the interaction occurs at surface of the sperm.
3. (Withdrawn) The method of claim 1, wherein the interaction occurs at head of the sperm.
4. (Withdrawn) The method of claim 1, wherein the interaction is the at least one sulfonated compound binding to the sperm.
5. (Withdrawn) The method of claim 1, wherein the compound is a polysulfonated compound.

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6. (Withdrawn) The method of claim 1, wherein the compound is in an aqueous solution.

7. (Withdrawn) The method of claim 1, wherein the compound inhibits the sperm interaction to a zona pellucida.

8. (Withdrawn) The method of claim 1, further comprising treating the sperm with the compound for at least about 3 minutes.

9. (Withdrawn) The method of claim 8, wherein the treatment occurs at about room temperature.

10. (Withdrawn) The method of claim 8, wherein the treatment occurs at about 37°C.

11. (Withdrawn) The method of claim 1, wherein the compound is administered after ejaculation.

12. (Withdrawn) The method of claim 1, wherein the compound is administered prior to ejaculation.

13. (Withdrawn) The method of claim 1, wherein the compound is administered vaginally.

14. (Withdrawn) The method of claim 1, wherein the compound is in a formulation, wherein the formulation is selected from the group consisting of a foam, a cream, a gel, a jelly, a douche, an aerosol, a film, a tablet, a sponge, a vaginal suppository, an impregnated tampon, a controlled delivery device, a vaginal ring, an intrauterine device, a lubricant on a male condom, a lubricant on a female condom, a lubricant on a cervical cap and a lubricant on a cap diaphragm.

15. (Withdrawn) The method of claim 1, wherein the animal is a primate.

16. (Withdrawn) A method for inhibiting fertilization, the method comprising administering an effective amount a compound derived from a natural source to an animal, the

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compound comprising at least one sulfonated compound, wherein the at least one sulfonated compound interacts with sperm.

17. (Withdrawn) The method of claim 16, wherein the at least one sulfonated compound is a polysulfonated compound.

18. (Withdrawn) The method of claim 16, wherein the at least one sulfonated compound is a lignosulfonic acid (LSA).

19. (Withdrawn) The method of claim 16, wherein the natural source is a lignin.

20. (Withdrawn) The method of claim 16, wherein the natural source is a plant, a fungus or an algae.

21. (Withdrawn) The method of claim 16, where the interaction occurs at surface of the sperm.

22. (Withdrawn) The method of claim 16, wherein the interaction occurs at head of the sperm.

23. (Withdrawn) The method of claim 16, wherein the interaction is the at least one sulfonated compound binding to the sperm.

24. (Withdrawn) The method of claim 16, wherein the compound inhibits the sperm interaction to a zona pellucida.

25. (Withdrawn) The method of claim 16, further comprising treating the sperm with the compound for at least about 3 minutes.

26. (Withdrawn) The method of claim 25, wherein the treatment occurs at about room temperature.

27. (Withdrawn) The method of claim 25, wherein the treatment occurs at about 37°C.

28. (Withdrawn) The method of claim 16, wherein the compound is administered after ejaculation.
29. (Withdrawn) The method of claim 16, wherein the compound is administered prior to ejaculation.
30. (Withdrawn) The method of claim 16, wherein the compound is administered vaginally.
31. (Withdrawn) The method of claim 16, wherein the compound is in a formulation, wherein the formulation is selected from the group consisting of a foam, a cream, a gel, a jelly, a douche, an aerosol, a film, a tablet, a vaginal suppository, a sponge, an impregnated tampon, a controlled delivery device, a vaginal ring, an intrauterine device, a lubricant on a male condom, a lubricant on a female condom, a lubricant on a cervical cap and a lubricant on a cap diaphragm.
32. (Withdrawn) The method of claim 16, wherein the animal is a primate.
33. (Withdrawn) A method for inhibiting fertilization, the method comprising administering an effective amount of a compound to an animal, the compound comprising at least one lignin or a derivative thereof, wherein the compound interacts with sperm.
34. (Withdrawn) The method of claim 33, wherein the derivative is sulfated.
35. (Currently Amended) A composition comprising at least one sulfonated compound, a pharmaceutically acceptable excipient and a sperm, wherein the sperm is from a **vertebrate**, a mammal, a human, a canine, a feline, or a rodent, ~~an insect, a fish, an amphibian, or a reptile~~, and wherein the at least one sulfonated compound is selected from the group consisting of: a lignosulfonic acid (LSA), ~~a polysulfonated compound~~, a polyanetholesulfonic acid (PASA), ~~a polyvinylsulfonic acid wherein the polyvinylsulfonic acid is other than a polystyrene sulfonate~~, a poly(2-acrylamido-2-methyl-1-propanesulfonic acid), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid co-acrylonitrile), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid-co-styrene), a poly(4-vinylpyridinium p-toluenesulfonate), and a sulfonic acid azo dye, ~~a sulfonic acid~~

~~derivative of a porphyrin, a sulfonic acid derivative of a triphenylmethane, a sulfonic acid derivative of a stilbene, a sulfonated phenylpropane, and a sulfonated kraft lignin.~~

36. (Cancelled).

37. (Currently Amended) A composition comprising at least one sulfonated compound and a spermicide, wherein the at least one sulfonated compound is selected from the group consisting of: a lignosulfonic acid (LSA), a polyanetholesulfonic acid (PASA), ~~a polyvinylsulfonic acid~~, a poly(2-acrylamido-2-methyl-1-propanesulfonic acid), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid co-acrylonitrile), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid-co-styrene), a poly(4-vinylpyridinium p-toluenesulfonate), and a sulfonic acid azo dye, ~~a sulfonic acid derivative of a porphyrin, a sulfonic acid derivative of a triphenylmethane, a sulfonic acid derivative of a stilbene, a sulfonated phenylpropane, and a sulfonated kraft lignin.~~

38. (Withdrawn) A contraceptive device comprising a device and at least one sulfonated compound in a formulation, wherein the device is selected from one or more of: a sponge, a tampon, an intrauterine device, a vagina ring, a male condom, a female condom, a cervical cap or a diaphragm, wherein the formulation is selected from the group consisting of a foam, a cream, a gel, a jelly, a douche, an aerosol, a film, a suppository and a tablet, and wherein the at least one sulfonated compound is selected from the group consisting of: a lignosulfonic acid (LSA), a polyanetholesulfonic acid (PASA), a polyvinylsulfonic acid, a poly(2-acrylamido-2-methyl-1-propanesulfonic acid), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid co-acrylonitrile), a poly(2-acrylamido-2-methyl-1-propanesulfonic acid-co-styrene), a poly(4-vinylpyridinium p-toluenesulfonate), a sulfonic acid azo dye, a sulfonic acid derivative of a porphyrin, a sulfonic acid derivative of a triphenylmethane, a sulfonic acid derivative of a stilbene, a sulfonated phenylpropane, a sulfonated kraft lignin, and derivatives thereof.

39. (Currently Amended) A composition comprising a compound isolated from a natural source, a pharmaceutically acceptable excipient and a sperm, wherein the sperm is from ~~a vertebrate~~, a mammal, a human, a canine, a feline, or a rodent, an insect, a fish, an amphibian, or

a reptile, wherein the compound interacts with the sperm, and wherein the compound comprises a lignosulfonic acid (LSA).

40. (Cancelled).

41. (Original) The composition of claim 39, wherein the natural source is a lignin.

42. (Original) The composition of claim 39, wherein the natural source is a plant, a fungus or an algae.

43. (Previously Presented) A composition comprising a compound isolated from a natural source and a spermicide, wherein the compound comprises a lignosulfonic acid (LSA).

44. (Cancelled).

45. (Withdrawn) A contraceptive device comprising a device and a compound isolated from a natural source, the compound comprising at least one sulfonated compound in a formulation, wherein the device is selected from one or more of: a sponge, a tampon, an intrauterine device, a vagina ring, a male condom, a female condom, a cervical cap or a diaphragm and wherein the formulation is selected from the group consisting of a foam, a cream, a gel, a jelly, a douche, an aerosol, a film, a suppository and a tablet.

46. (Withdrawn) The contraceptive device of claim 45, wherein the sulfonated compound is a lignosulfonic acid (LSA).

47. (Withdrawn) The contraceptive device of claim 45, wherein the natural source is a plant, a fungus or an algae.

48. (Withdrawn) The contraceptive device of claim 45, wherein the natural source is a lignin.

49. (Currently Amended) A composition comprising an LSA a sulfated lignin or, a pharmaceutically acceptable excipient and a sperm, wherein the sperm is from a vertebrate, a mammal, a human, a canine, a feline, or a rodent, an insect, a fish, an amphibian, or a reptile.

50. (Cancelled).

51. (Currently Amended) A composition comprising an LSA a sulfated lignin and a spermicide.

52. (Cancelled).

53. (Withdrawn) A contraceptive device comprising a device and a compound comprising at least one lignin or a derivative thereof in a formulation, wherein the device is selected from one or more of: a sponge, a tampon, an intrauterine device, a vagina ring, a male condom, a female condom, a cervical cap or a diaphragm and wherein the formulation is selected from the group consisting of a foam, a cream, a gel, a jelly, a douche, an aerosol, a film, a suppository and a tablet.

54. (Withdrawn) The contraceptive device of claim 53, wherein the derivative is sulfated.

55. (Withdrawn) A method of inhibiting fertilization, the method comprising administering an effective amount of a compound to an animal, the compound comprising at least one sulfonated compound, wherein the compound interacts with sperm and wherein the at least one sulfonated compound is other than a polystyrene sulfonate, a long chain alkyl sulfonate, a long chain alkenyl sulfonate, a sulfoalkyl alkanoate salt, a sodium tetradecyl sulfonate, a sulfonated hesperidin, a substituted benzenesulfonic acid formaldehyde co-polymer, a H<sub>2</sub>SO<sub>4</sub>-modified mandelic acid, a condensation polymer product produced a condensation reaction of an aromatic sulfonic acid and an aldehyde, a formaldehyde naphthalenesulfonic acid condensation polymer, a 8-anilino-1-naphthalenesulfonate, a N-(6 aminoethyl)-5-chloro-1-naphthalenesulfonamide, a N-(6 aminoethyl)-5-chloro-2-naphthalenesulfonamide, and a N-(6 aminoethyl)-5-bromo-2-naphthalenesulfonamide.